

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) An optical semiconductor device comprising:
 - an optical semiconductor element having a cathode and an anode;
 - a first conductor line connected to the cathode of the optical semiconductor element, and supplying a first electric signal to the optical semiconductor element;
 - a second conductor line connected to the anode of the optical semiconductor element, and supplying a second electric signal to the optical semiconductor element;
 - a first inductance element connected to the cathode of the optical semiconductor element and the first conductor line; **and**
 - a second inductance element connected between the anode of the optical semiconductor element and a ground potential such that one end of the second inductance element is connected at the ground potential, and connected to the second conductor line;

a first bias circuit including the first inductance element and a first resistor connected in parallel to the first inductance element; and

a second bias circuit including the second inductance element and a second resistor connected in parallel to the second inductance element, wherein:

the first and the second conductor lines constitute a pair of differential lines;

and

the first and second inductance elements are configured to permit a bias current to pass therethrough, and simultaneously prevent the first and second electric signals from passing therethrough, respectively.

2. (Previously Presented) The optical semiconductor device according to claim 1, further comprising a pair of matching resistors connected to the cathode and anode of the optical semiconductor element, respectively, and introducing the first and second electric signals to the optical semiconductor element, respectively.

3. (Cancelled)

4. (Cancelled)

5. (Previously Presented) The optical semiconductor device according to claim 2, comprising a filter that cuts off frequencies higher than at least a maximum repetition frequency of a digital signal, the filter provided between the first and the second conductor lines and the pair of matching resistors.

6. (Original) The optical semiconductor device according to claim 5, wherein

the filter includes a first conductor finger section and a second conductor finger section in which a plurality of conductors crossing the first and the second conductor lines are formed, respectively, to have a comb shape, the first conductor finger section and the second conductor finger sections being alternately arranged.

7. (Previously Presented) The optical semiconductor device according to claim 6, comprising:

a package containing the first and the second conductor lines therein;

a lens that condenses light emitted from the optical semiconductor element;

and

an optical fiber holding member that holds an optical fiber.

8. (Original) The optical semiconductor device according to claim 7, wherein the first and the second inductance elements are air-cored coils.

9. (Original) The optical semiconductor device according to claim 8, wherein the optical semiconductor element is a semiconductor laser diode.

10. (Previously Presented) The optical semiconductor device according to claim 1, comprising:

a package containing the first and the second conductor lines therein;

a lens that condenses light emitted from the optical semiconductor element;

and

an optical fiber holding member that holds an optical fiber.

11. (Original) The optical semiconductor device according to claim 1, wherein the first and the second inductance elements are air-cored coils.

12. (Original) The optical semiconductor device according to claim 1, wherein the optical semiconductor element is a semiconductor laser diode.

13. (Currently Amended) The optical semiconductor device according to claim 1, wherein impedances of ~~at least two~~ the first and second bias circuits are set to be substantially asymmetric.

14. (Currently Amended) An optical semiconductor device comprising:
an optical semiconductor element having a cathode and an anode;
a first differential input terminal supplying a first electric signal to the cathode of the optical semiconductor element;
a second differential input terminal supplying a second electric signal opposite in phase to the first electric signal supplied by the first differential input terminal, to the anode of the optical semiconductor element;
a first inductance element connected to the cathode of the optical semiconductor element and the first conductor line, and cutting off the first electric signal at a high frequency; and
a second inductance element connected between the anode of the optical semiconductor element and a ground potential such that one end of the second inductance element is connected at the ground potential, connected to the second conductor line, and cutting off the second electric signal at a high frequency;
a first bias circuit including the first inductance element and a first resistor connected in parallel to the first inductance element; and
a second bias circuit including the second inductance element and a second resistor connected in parallel to the second inductance element,
wherein the first and second inductance elements are configured to permit a

bias current to pass therethrough, and simultaneously prevent the first and second electric signals from passing therethrough, respectively.

15. (Currently Amended) An optical semiconductor device comprising:

an optical semiconductor element having a cathode and an anode;

a pair of differential amplifiers each having a first terminal and a second terminal connected to the cathode and anode of the optical semiconductor element, respectively, and supplying first and second electric signals to the optical semiconductor element, respectively;

a first inductance element connected to the cathode of the optical semiconductor element, and cutting off the first electric signal at a high frequency;

and

a second inductance element connected between the anode of the optical semiconductor element and a ground potential such that one end of the second inductance element is connected at the ground potential, and cutting off the second electric signal at a high frequency;

a first bias circuit including the first inductance element and a first resistor connected in parallel to the first inductance element; and

a second bias circuit including the second inductance element and a second resistor connected in parallel to the second inductance element,

wherein the first and second inductance elements are configured to permit a bias current to pass therethrough, and simultaneously prevent the first and second electric signals from passing therethrough, respectively.

16. (Currently Amended) An optical semiconductor device comprising:

an optical semiconductor element having a cathode and an anode;

first and second conductor lines connected to the cathode and anode of the optical semiconductor element, and supplying first and second differential signals to the optical semiconductor element, respectively;

a first terminal electrically connected to the first conductor line and cathode of the optical semiconductor element;

a second terminal electrically connected to the second conductor line and the anode of the optical semiconductor element;

a first bias circuit electrically connected to the first terminal and cutting off the first differential signal at a high frequency, the first bias circuit including a first inductance element and a first resistor connected in parallel to the first inductance element; and

a second bias circuit including a second inductance element and a second resistor connected in parallel to the second inductance element, the second bias circuit being electrically connected to the second terminal, between the anode of the optical semiconductor element and a ground potential such that one end of second inductance element of the second bias circuit is connected at the ground potential, and the second bias circuit cutting off the second differential signal at a high frequency,

wherein the first and second bias circuits are configured to permit a bias current to pass therethrough, and simultaneously prevent the first and second differential signals from passing therethrough, respectively.

17. (Currently Amended) An optical semiconductor device comprising:

an optical semiconductor element having a cathode and an anode;

a first conductor line connected to the cathode of the optical semiconductor element, and supplying a first electric signal to the optical semiconductor element;

a second conductor line connected to the anode of the optical semiconductor element, and supplying a second electric signal to the optical semiconductor element;

a first inductance element connected to the cathode of the optical semiconductor element and the first conductor line; and

a second inductance element connected between the anode of the optical semiconductor element and a ground potential such that one end of the second inductance element is connected at the ground potential, and connected to the second conductor line;

a first bias circuit including the first inductance element and a first resistor connected in parallel to the first inductance element; and

a second bias circuit including the second inductance element and a second resistor connected in parallel to the second inductance element, wherein:

the optical semiconductor element is driven by a push-pull operation; and

the first and second inductance elements are configured to permit a bias current to pass therethrough, and simultaneously prevent the first and second electric signals from passing therethrough, respectively.

18. (Currently Amended) The optical semiconductor device according to claim 17, wherein impedances of ~~at least two~~ the first and second bias circuits are

set to be substantially asymmetric.

19. (Previously Presented) The optical semiconductor device according to claim 1, further comprising:

a first matching resistance connected in parallel to the cathode of the optical semiconductor element, and introducing the first electric signal to the optical semiconductor element; and

a second matching resistance connected in parallel to the anode of the optical semiconductor element, and introducing the second electric signal to the optical semiconductor element.

20. (Previously Presented) The optical semiconductor device according to claim 19, further comprising a filter circuit that cuts off frequencies higher than at least a maximum repetition frequency of a digital signal, the filter having first and second electrodes respectively connected to the first and second matching resistances.

21. (Previously Presented) The optical semiconductor device according to claim 1, wherein:

the first inductance element is connected in parallel to the first conductor line and the cathode of the optical semiconductor element; and

the second inductance element is connected in parallel to the second conductor line and the anode of the optical semiconductor element.

22. (Previously Presented) The optical semiconductor device according to claim 1, wherein the first inductance element is connected between the cathode of the optical semiconductor element and a current source.

23. (Cancelled)